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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,305	04/01/2004	Nikolai Ivanovich Balin	0020.0001.con	8564
7590	01/27/2005		EXAMINER	
Maria M. Elliseeva Houston Eliseeva LLP Ste. 4 4 Militia Drive Lexington, MA 02421			FRANK, RODNEY T	
			ART UNIT	PAPER NUMBER
			2856	
DATE MAILED: 01/27/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/816,305

Applicant(s)

BALIN ET AL.

Examiner

Rodney T. Frank

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-27 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7 is/are rejected.
- 7) ☒ Claim(s) 5, 6 and 8-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et. al. (U.S. Patent Number 4,130,018; hereinafter referred to as Adams). Adams discloses an ultrasonic transducer for a system for determining liquid levels by echo ranging composed of a housing including a piezoelectric crystal mounted within the housing to transmit acoustic waves, an impedance matching medium mounted within the housing adjacent the crystal and including a window layer and a diaphragm layer to transmit acoustic waves between the crystal and a gaseous environment which window layer is composed of a material having hollow glass spheres dispersed therein, and a dampening backing mounted in said housing to abut the crystal which backing includes a plurality of solid lead spheres; a tube mounted to extend from the housing to form a beam of acoustic waves propagated from said crystal, the tube having an end which is telescoped into the housing and spaced a short distance from the diaphragm to form a gap for flow communication; and a reference reflector assembly mounted to extend from adjacent said housing, which assembly includes a U-shaped member having two legs extending in slideable contact with the sidewall of the tube and further including a member connecting the two legs (Please see the abstract).

Art Unit: 2856

3. With regard to claim 1, Adams discloses and illustrates in figures 1 and 2, a liquid level detector comprising a detector element, a damping element (18), a transducer (10). Though the transducer is not disclosed to comprise a membrane, Adams does disclose a window layer (16), which appears to be similar in function. Though the examiner admits that there is no membrane with the transducer of Adams, the use of such a transducer is well established in the state of the art of level measurement, and the substitution of such a transducer with a membrane, in light of the window layer present in Adams, would appear to be an obvious variation to one of ordinary skill in the art. Adams further discloses a transducer, that as can best be determined, is coupled to the sensor body by the damping element since the damping element (18) is directly coupled to polyurethane and polyurethane foam (26 and 27, respectively) which helps seal the sensor body. Though a specific sleeve is not disclosed, the housing (12) is a sleeve type shape attached to the tubular waveguide (13) with reflectors (14), and the tube has a cavity and an inlet. There is a portion between the housing (12) and the tube (13) which is used to match the acoustic signal that comprises a diaphragm (17) and a cavity (31) coupled to the waveguide, and a dampening element providing acoustic and vibration decoupling of the transducer and detector housing.

With regard to claim 2, the acoustic matching portion is cup shaped as shown in figure 1.

With regard to claims 3 and 4, the cup cavity is filled with polyurethane or polyurethane foam.

With regard to claim 7, since it is disclosed that the function of window layer (16) is to keep the contents under test from the transducer, then the transducer would be considered hermetic.

***Allowable Subject Matter***

4. Claims 5, 6, and 8-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 13-27 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: The liquid level detector comprising a  $\Gamma$  or T shaped intermediate acoustic waveguide coupled to a detector body, in combination with all other limitations of the independent claim is not disclosed nor deemed obvious in view of the prior art of record. The disclosed intermediate waveguide shapes are not disclosed nor deemed obvious in view of the prior art of record since all the prior art would indicate a simple straight waveguide shape.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner has cited various references deemed relevant to the general state of the art of the present invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9am -5:30p.m..

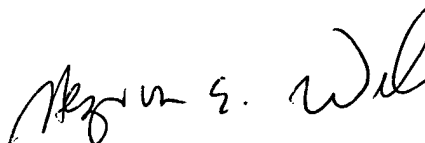
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2856

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF

January 24, 2005

A handwritten signature in black ink, appearing to read "Hezron S. Williams", with a long, sweeping horizontal line extending to the right.

HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800